Seminar on

Optimal Satellite-based Estimation of Extreme Rainfall at the Global Scale

Speaker: **Enrico Zorzetto**

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at University of Padua, Department of Civil, Architectural and Environmental Engineering (DICEA), via Loredan 20

Seminar Room (3rd floor)

Preview

Quantification of the frequency of extreme rainfall events is a major challenge in hydrology and engineering.

Rainfall fields are notoriously difficult to both measure and model, due to their space-time intermittency. Rainfall space-time variability, in fact, strongly limits our ability to manage water resources and to protect communities from natural disasters.

In the last few decades, the development of satellite-based rainfall detection techniques has remarkably improved our ability to sample rainfall fields with increasing spatial resolution and quasi-global coverage. However, the limited length of the available datasets (less than two decades) strongly undermines traditional statistical techniques hinged on asymptotic assumptions and on the concept on block-maxima.

The lecturer will present the application of a recently introduced technique based on the Metastatistical Extreme Value Distribution to satellite estimates of daily rainfall. This approach (i) reduces the estimation uncertainty when only small samples are available for inference, as is the case for satellite-sensed rainfall, and (ii) accounts for the inter annual variability observed in rainfall regimes.

The technique is here applied to the NASA Tropical Rainfall Measurement Mission dataset to obtain estimates of extreme rainfall events at the global scale.